



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2018-0538; Product Identifier 2012-NE-47-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (SNPRM); reopening of comment period.

SUMMARY: The FAA is revising an earlier proposal for certain Rolls-Royce plc (RR) RB211 Trent 768-60, 772-60, and 772B-60 model turbofan engines. This action revises the notice of proposed rulemaking (NPRM) by modifying the inspection threshold for ultrasonic inspections (UIs) of the affected low-pressure (LP) compressor blades for both standard operations and non-standard operations (NSO). This action also revises the service information references. The FAA is proposing this airworthiness directive (AD) to address the unsafe condition on these products. Since these actions would impose an additional burden over those in the NPRM, the FAA is reopening the comment period to allow the public the chance to comment on these changes.

DATES: The comment period for the NPRM published in the Federal Register on August 14, 2018 (83 FR 40161), is reopened.

The FAA must receive comments on this SNPRM by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202 493 2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12 140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this SNPRM, contact Rolls-Royce plc, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: 44 (0)1332 242424; fax: 44 (0)1332 249936; email: https://www.rolls-royce.com/contact/civil_team.jsp. You may view this service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Examining the AD Docket

You may examine the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0538; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this SNPRM, the mandatory continuing airworthiness information (MCAI), the regulatory evaluation, any comments received, and other information. The street address for Docket Operations is listed above. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Stephen Elwin, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7236; fax: 781-238-7199; email: stephen.l.elwin@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2018-0538; Product Identifier 2012-NE-47-AD” at the beginning of your comments. The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this SNPRM. The FAA will consider all comments received by the closing date and may amend this SNPRM because of those comments.

The FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this SNPRM.

Discussion

The FAA issued an NPRM to amend 14 CFR part 39 by superseding AD 2017-03-02, Amendment 39-18793 (82 FR 10701, February 15, 2017), (“AD 2017-03-02”) that would apply to certain RR RB211 Trent 768-60, 772-60, and 772B-60 model turbofan engines. AD 2017-03-02 resulted from revised service information to reduce the inspection threshold of the UI for the LP compressor blades. The NPRM published in the Federal Register on August 14, 2018 (83 FR 40161). The NPRM was prompted by LP compressor blade partial airfoil release events. The NPRM proposed to require initial and repetitive UIs of the affected LP compressor blade and replacement of the LP compressor blade with a part eligible for installation if the LP compressor blade fails an inspection.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2018-

0188R1, dated September 5, 2018 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Occurrences have been reported of LP compressor partial aerofoil blade release events on RR Trent 700 engines. While primary containment of the released sections was achieved in each case, some of the releases did exhibit secondary effects that are considered to present a potential hazard.

This condition, if not detected and corrected, could lead to LP compressor blade release with possible consequent loss of the engine nose cowl, under cowl fires and forward projection of secondary debris, possibly resulting in damage to the aeroplane and/or injury to persons on the ground.

To address this potential unsafe condition, RR published NMSB RB.211-72-G872, providing inspection instructions and, consequently, EASA issued AD 2012-0247 to require a one-time inspection of the higher life LP compressor blades. After identification of a population of these LP compressor blades that were incorrectly inspected, RR issued NMSB RB.211-72-H311 and, consequently, EASA issued AD 2013-0060, retaining the requirements of EASA AD 2012-0247, which was superseded, to require a one-time re-inspection of the affected blades.

After that AD was issued, to mitigate the risk of further partial LP compressor blade release events, RR issued NMSB RB.211-72-AH465, providing instructions for ultrasonic inspection of the affected parts to detect sub-surface anomalies in the aerofoil.

Consequently, EASA issued AD 2014-0031, superseding [EASA]

AD 2013-0060, to require repetitive inspections of all affected LP compressor blades and, depending on findings, replacement.

Thereafter, EASA issued AD 2016-0141, retaining the requirements of [EASA] AD 2014-0031, which was superseded, to reduce inspection threshold (RR Alert NMSB RB.211-72-AH465 Revision 2). Prompted by further analysis, EASA issued AD 2017-0241, retaining the requirements of EASA AD 2016-0141, which was superseded, further reducing the inspection threshold and interval (RR Alert NMSB RB.211-72-AH465 Revision 4).

Since EASA AD 2017-0241 was issued, RR issued the NMSB to distinguish between standard operations and NSO and to determine the applicable inspection threshold and interval. The flight cycles (FC) accumulated by operators conducting NSO have to be calculated using the beta factor shown in Table of the NMSB. The NMSB also introduces, for engines that have accumulated more than 600 FC or standard duty cycles (SDC, for engines used in NSO), a closing date by which these have to be inspected at least once.

For the reason described above, this [EASA] AD retains the requirements of EASA AD 2017-0241, which is superseded, and requires implementation of the changes introduced.

You may obtain further information by examining the MCAI in the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2018-0538.

Actions Since the NPRM was Issued

Since the FAA issued the NPRM, the manufacturer determined the need to modify the inspection threshold for UIs and to distinguish between operators conducting standard operations and NSO. The manufacturer also determined the need to require inspection of engines that have accumulated greater than 600 flight cycles (FCs) or standard duty cycles (SDCs) for engines used in NSO.

Also, since the FAA issued the NPRM, EASA issued EASA AD 2018-0188R1, dated September 5, 2018, which requires UIs of each affected LP compressor blade within the compliance time specified in the Accomplishment Instructions, paragraph 3, of RR Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AH465, Revision 5, dated July 26, 2018 (“the NMSB”). The FAA also determined the need to revise the references to the service information in this AD because, since the publication of the NPRM, RR published the NMSB.

Comments

The FAA gave the public the opportunity to comment on the NPRM. The following presents the comments received on the NPRM and the FAA’s response to each comment.

Request to Update Service Information

A commenter requested that the FAA update all service information references from RR Alert NMSB RB.211-72-AH465, Revision 4, to Revision 5. The commenter indicated that updated service information contains all the inspection compliance time and requirements as Revision 4, but Revision 5 also addresses NSO.

The FAA agrees to reference the latest revision of the service information in this proposed AD.

Support for the AD

The Air Line Pilots Association International supported the NPRM as written.

Related Service Information under 1 CFR Part 51

The FAA reviewed RR Alert NMSB RB.211-72-AH465, Revision 5, dated July 26, 2018. The NMSB describes procedures for performing a UI of the LP compressor blades. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

FAA's Determination

This product has been approved by EASA, and is approved for operation in the United States. Pursuant to our bilateral agreement with the European Community, EASA has notified us of the unsafe condition described in the MCAI and service information referenced above. The FAA is proposing this AD because it evaluated all the relevant information provided by EASA and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design. Certain changes described above expand the scope of the NPRM. As a result, the FAA has determined that it is necessary to reopen the comment period to provide additional opportunity for the public to comment on this SNPRM.

Proposed Requirements of this SNPRM

This SNPRM would require initial and repetitive UIs of the affected LP compressor blades and, depending on the results, their replacement with a part eligible for installation.

Costs of Compliance

The FAA estimates that this proposed AD affects 56 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspect LP compressor blade	44 work-hours X \$85 per hour = \$3,740	\$0	\$3,740	\$209,440

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The FAA has no way of determining the number of engines that might need this replacement.

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Replace LP compressor blade (one blade per 77 engine sets)	6 work-hours X \$85 per hour = \$510	\$103,000	\$103,510

According to the manufacturer, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. The FAA does not control warranty coverage for affected individuals. As a result, the FAA has included all costs in our cost estimate.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

Rolls-Royce plc: Docket No. FAA-2018-0538; Product Identifier 2012-NE-47-AD.

(a) Comments Due Date

The FAA must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2017-03-02, Amendment 39-18793 (82 FR 10701, February 15, 2017).

(c) Applicability

This AD applies to Rolls-Royce plc (RR) RB211 Trent 768-60, 772-60, and 772B-60 turbofan engines, with low-pressure (LP) compressor blade, part number (P/N) FK23411, FK25441, FK25968, FW11901, FW15393, FW23643, FW23741, FW23744, KH23403, or KH23404, installed.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by LP compressor blade partial airfoil release events. While released sections were contained in each case, projection of secondary debris and effects could present a potential hazard. The FAA is issuing this AD to prevent LP

compressor blade airfoil separation. The unsafe condition, if not addressed, could result in damage to the engine and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) Within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD and thereafter, at intervals not to exceed 1,200 flight cycles (FCs) or Standard Duty Cycle (SDCs) for Non-Standard Operations (NSO), as applicable, since the last ultrasonic inspection (UI), perform a UI of each affected LP compressor blade in accordance with the Accomplishment Instructions, paragraph 3, of RR Alert Non-Modification Service Bulletin (NMSB) RB.211-72-AH465, Revision 5, dated July 26, 2018.

Note 1 to paragraph (g): Paragraph 1.D of Rolls-Royce Alert NMSB RB.211-72-AH465, Revision 5, dated July 26, 2018, describes how to determine the applicable SDCs. The Time Limits Manual (TLM), 05-00-01, defines NSO.

Figure 1 to paragraph (g)(1) – Inspection Threshold

FCs/SDC Accumulated Since New or Since Last Inspection Required by paragraph (g)(1)	Compliance Times
Less than 1,100 FCs/SDCs	Before exceeding 1,200 FCs/SDCs since new.
1,100 FCs/SDCs or greater	Within 100 FCs/SDCs after the effective date of this AD, or before exceeding 2,400 FCs/SDCs since new, whichever occurs first.

(2) If, during any inspection required by paragraph (g)(1) of this AD, a LP compressor blade is rejected by the UI, as defined in Accomplishment Instructions, paragraph 3, of RR Alert NMSB RB.211-72-AH465, Revision 5, dated July 26, 2018, before further flight, or before returning the LP compressor blade to service, whichever

occurs first, remove the affected LP compressor blade from service and replace with a part eligible for installation.

(h) Installation Prohibition

After the effective date of this AD, do not install an affected LP compressor blade on an engine unless the LP compressor blade meets the conditions specified in paragraphs (h)(1) or (2) of this AD, as applicable.

(1) The affected part has not exceeded 1,200 FC or SDCs (for NSO) since new, or since inspection in accordance with RR Alert NMSB RB.211-72-AH465, Revision 5, dated July 26, 2018, or since an inspection as specified in paragraph (k) of this AD, whichever occurs later.

(2) Prior to installation, the affected part has passed an ultrasonic inspection in accordance with paragraph (g)(1) of this AD.

(i) No Reporting Requirement

The reporting requirements in the Accomplishment Instructions, paragraph 3 of RR Alert NMSB RB.211-72-AH465, Revision 5, dated July 26, 2018, are not required by this AD.

(j) Credit for Previous Actions

You may take credit for LP compressor blade UIs required by paragraph (g)(1) of this AD, if you performed the UI before the effective date of this AD using:

(1) The instructions referenced in the mandatory inspection paragraph of the applicable engine TLM, provided the compliance times of this AD are not exceeded; or

(2) RR NMSB RB.211-72-G702, dated May 23, 2011; RR NMSB RB.211-72-G872, Revision 2, dated March 8, 2013, or earlier versions; RR NMSB RB.211-72-H311, dated March 8, 2013; RR NMSB RB.211-72-AH465, Revision 4, dated October 3, 2017, or earlier versions; Engine Manual E-Trent-1RR, Task 72-31-11-200-806; or Airbus

A330 Aircraft Maintenance Manual (AMM) Task 72-31-41-270-801, or AMM Task 72-31-41-270-802.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in paragraph (l)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(l) Related Information

(1) For more information about this AD, contact Stephen Elwin, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA, 01803; phone: 781-238-7236; fax: 781-238-7199; email: stephen.l.elwin@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2018-0188R1, dated September 5, 2018, for more information. You may examine the EASA AD in the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating it in Docket No. FAA-2018-0538.

(3) For service information identified in this AD, contact Rolls-Royce plc, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: 44 (0)1332 242424; fax: 44 (0)1332 249936; email: https://www.rolls-royce.com/contact/civil_team.jsp. You may view this referenced service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA, 01803. For information on the availability of this material at the FAA, call 781-238-7759.

Issued in Burlington, Massachusetts, on November 6, 2019.

Robert J. Ganley,
Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.

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